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ABSTRACT

Natural Resources for Grade 3 is a "hands-on" environmental activities unit designed for teachers to use with their students. Activities are chosen from natural resource programs such as Project Learning Tree, Project WILD, Aquatic Wild, and Project WET. The activities address natural resource themes and meet the Virginia Standards of Learning for Grade 3. The 30 lessons contained within cover a number of topics including the water cycle, survival of species, sources of energy, the life cycle of a tree, plant and animal diversity, food chains, and animal adaptations. The lessons are interdisciplinary in their approach, meeting objectives from science, mathematics, oral language, reading, literature, writing, and research skills. (DDR)

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Connections:

Water, Systems & Resources

Unit

Grade 3

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"Meeting the SOLS Using Natural Resources"

**Inspired by a Course at VA Tech College of Forestry and Wildlife,
Summer 1996 (Kathy Sevebeck, Instructor)**

**Developed by Catherine R. Ney
Christiansburg Elementary School
Montgomery County Public Schools**

NATURAL RESOURCES: Grade 3

Unit Description

Natural Resources for Grade 3 is a "hands-on" environmental activities unit designed for teachers to use with their grade 3 students. Activities were chosen from natural resource programs (Project Learning Tree, Project WILD, Aquatic Wild, and WET), UNITES program and other sources for their ability to address natural resource themes--while meeting the Virginia Standards of Learning (SOL) for grade 3.

SOL

Science:

- 3.1 Plan and conduct investigations
- 3.2 Study simple machines
- 3.3 Study objects in terms of materials
- 3.4 Study animal behavioral and physical adaptations
- 3.5 Study aquatic and terrestrial food chains
- 3.6 Study plant and animal diversity
- 3.7 Study soils
- 3.8 Study sequences and cycles in nature
- 3.9 Study the water cycle
- 3.10 Study survival of a species
- 3.11 Study sources of energy

Math:

- 3.14 Estimate and use actual measuring devices
- 3.15 Tell time to the nearest five-minute interval and minute
- 3.17 Read temperature from a Celsius and Fahrenheit thermometer
- 3.21 Collect data and construct a bar graph
- 3.22 Read and interpret data represented in bar and picture graphs
- 3.23 Investigate and describe the concept of probability of a given situation

English:

Oral Language

- 3.1 Use effective communication skills in group activities
- 3.2 Present brief oral reports

Reading/Literature

- 3.4 Use strategies to read a variety of printed materials
- 3.5 Demonstrate comprehension of a variety of printed materials
- 3.6 Read a variety of fiction and nonfiction selections

Writing

- 3.7 Write descriptive paragraphs
- 3.8 Write stories, letters, simple explanations, and short reports across content areas

Research

- 3.10 Record information from print and nonprint resources

RESOURCES

Teacher Sources:

Water Precious Water (2-6): Aims
AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747-8120

UNITES: Using Literature to Unite the Curriculum V2 (Grades 3-5)
BEM Publishing, Inc.
707 Crestwood Drive
Blacksburg, VA 24060-6005

Project WILD (P/W)
Suzie Gilley
Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, VA 23230

Project Aquatic WILD (A/W)
Suzie Gilley
Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, VA 23230

Project WET
Ann Regn
Department of Environmental Quality
629 E. Main Street
Richmond, VA 23240

Related Poetry:

The Random House Book of Poetry for Children, Prelutsky
Animals, Animals Eric Carle

Student Sources:

The Magic SchoolBus at the Waterworks, Joanna Cole
The Trip of a Drip, Vicki Cobb
The Legend of the Bluebonnet, Tomie de Paola
Noah's Ark, Peter Spier
Bringing the Rain to Kapiti Plain, Verna Aardema
Experiments with Water, Ray Broekel
The Wump World, Bill Peet
The Cat in the Hat Comes Back, Dr. Seuss
Hop on Pop, Dr. Seuss
Wonders of Rivers, Rae Bains
Just So Stories, Rudyard Kipling

A Tree is Nice, Janice May Udry
The Giving Tree, Shel Silverstein
How the Forest Grew, William Jasperson
Johnny Appleseed, Steven Kellog
The Grampa Tree, Mike Donahue
Chipmunk Song, Joanne Ryder
Animal Tracks, Arthur Dorrus
The Biggest Bear, Lynn Ward
Two Bad Ants, Chris Van Allsburg
Miss Rumphius, Barbara Cooney
The Snail's Spell, Joanne Ryder
Animals Should Definitely Not Wear Clothing, Judi and Ron Barrett
Glasses, Who Needs Them?, Lane Smith
Swamp Angel, Annie Isaacs

Students read:

My Father's Dragon, Gannet
The Great Kapok Tree, Lynne Cherry
Jumanji, Chris Van Allsburg
One Day in the Tropical Rain Forest, Jean Craighead George
Roxaboxen, McLerran
Mr. Popper's Penguins, Atwater

List of Activities in the Unit

"A Drop in the Bucket" *Project WET* p. 238
"Water Models" *Project WET* p. 201
"The Long Haul" *Project WET* p. 260
"Water Meter" *Project WET* p.271
"Money Down the Drain" *Project WET* p. 328
"The Incredible Journey" *Project WET* p.161
"A-maze-ing Water" *Project WET* p. 219
"Pollution Search" *PLT* p. 114
"Deadly Waters" *Project A/W* p. 146
"Sunlight and Shades of Green" *PLT* p. 137
"Tree Life Cycle" *PLT* p.302
"Playing Lightly on the Earth" *Project WILD* p. 292
"Tropical Treehouse" *PLT* p.160
"One Day in the Tropical Rain Forest, *UNITES V2 (3)* p. 26
"Jumanji" *UNITES V2 (3)* p. 14
"Habitat Pen Pals" *PLT* p. 18
"Wildlife is Everywhere" *Project WILD* p. 20
"Habittracks" *Project WILD* p. 36
"How Many Bears Can Live in This Forest" *Project WILD* p. 134
"My Father's Dragon" *UNITES V2 (3)* p. 8
"Mr. Popper's Penguins" *UNITES V2 (3)* p. 20
"Roxaboxen" *UNITES V2 (3)* p.24

"The Fallen Log" *PLT* p. 72

"Nature's Recyclers" *PLT* p. 75

"Surprise Terrarium" *Project WILD* p. 118

"Birds and Worms" *PLT* p. 77

"Thicket Game" *Project WILD* p. 112

"Ants on a Twig" *Project WILD* p. 10

"Seeing is Believing or the Eyes Have It!" *Project WILD* p. 116

"Capture, Store and Release" *Project WET* p. 133

Suggested List of Additional Activities (not in Unit)

"The Boxcar Children" *UNITES V2 (3)* p. 4

"Just So Stories" *UNITES V2 (3)* p. 14

"Owls in the Family" *UNITES V2 (3)* p. 18

"The Great Kapok Tree" *UNITES V2 (3)* p. 28

"Mr. Gumpy's Motorcar" *UNITES V2 (3)* p. 32

"Stone Fox" *UNITES V2 (3)* p. 36

"Magic School Bus at the Waterworks" *UNITES V2 (3)* p. 34

"Water Plant Art" *Project A/W* p. 12

"People, Places and Things" *PLT* p. 280

"Life in the Fast Lane" *Project WET*

"Field, Forest and Stream" *PLT* p. 156

"Wetland Soils in Living Color" *Project WET* p. 212

"Just Passing Through" *Project WET* p. 166

"Irrigation Interpretation" *Project WET* p. 254

"Water Concentration" *Project WET* p. 407

"Environmental Barometer" *Project WILD* p. 80

"Plastic Jellyfish" *Project A/W* p. 170

Lesson 1: Water Cycle

"A Drop in the Bucket" *Project WET* p. 238

Objective: Students will estimate and then calculate the amount of fresh water for human use on Earth

Materials: flex tanks, mL containers, eye droppers, poster of the water cycle

Procedures:

1. Read "Magic School Bus at the Waterworks" *UNITES V2 (3)* p. 34
 - a. Research each of the places Ms. Frizzle visited on the class trip
 - b. Write a description of one of the places visited
2. Use *Water Precious Water (2-6): Aims* to predict/actual percentage fresh water
3. Use 1,000 mL of water to represent Earth's water
 - a. Pour 30 mL of water out into a container to represent Earth's fresh water
 - b. Pour 6 mL of 30 mL into a container to represent non-frozen water
 - c. Pour 1.5 mL of 6 mL into a graduated cylinder to represent surface water
 - d. Use eyedropper to remove a single drop of water to represent nonpolluted fresh water

Evaluation: Assess student abilities to accurately calculate percentages of water on Earth after doing the activity

SOL

Science: 3.1 Plan and conduct investigations

3.8 Study sequences and cycles in nature

3.9 Study the water cycle

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read & interpret data in bar and picture graphs

English: Oral Language 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 2: Water Cycle

"Water Models" Project WET p. 201

Objective: Students will construct models of the water cycle

Materials: fry pan, ice, duct tape, 2-L plastic bottles, water, sand, rocks

Procedures:

1. Read *Noah's Ark*, Peter Spier (explain and write about floods)
 - a. Explain how the amount of water on Earth has not changed over time
 - b. Research and write a description of a flood in your area
2. Copy "Water Cycle in a Jar" and "Observation Sheet" pp.204,205 *WET*
3. Adapt this activity to use 2-L plastic bottles, not glass jars

Evaluation: Evaluate student abilities to write an accurate description of what is happening in their water-cycle jar

SOL

Science: 3.1 Plan and conduct investigations

3.8 Study sequences and cycles in nature

3.9 Study the water cycle

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 3: Water Cycle

"The Long Haul" Project WET p. 260

Objective: Students will haul water to appreciate the amount of water used daily

Materials: two-1 gallon buckets, 2 garbage cans

Procedure:

1. Read *The Legend of the Bluebonnet*, Tomie de Paola (about too little water)
 - a. Discuss how water was hauled before indoor plumbing
 - b. Research and write about fire departments at the turn of the century
2. Discuss a household of three uses 200 g (760L) of water daily
3. Play a water-hauling game
 - a. Divide class into teams of two

- b. Each team gets 1g buckets in this relay
- c. Haul water from source (spigot) to destination (garbage can) 150 feet away
- 5. Record results
 - a. Make comparisons using data
 - b. Draw conclusions

Evaluation: Assess student abilities to describe how water was transported before indoor plumbing

SOL

Science: 3.1 Plan and conduct investigations
3.9 Study the water cycle

Math: 3.14 Estimate and use actual measuring devices
3.21 Collect data and construct a bar graph

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

Writing: 3.7 Write descriptive paragraphs
3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 4: Water Cycle

"Water Meter" Project WET p.271

Objective: Students will construct water meters and calculate personal use

Materials: Copy WET p. 272, 5"x 7" index card, red and white ribbon, glue, scissors, ruler

Procedures:

1. Read *Bringing the Rain to Kapiti Plain*, Verna Aardema (about too little water)
 - a. Research ways children can reduce the amount of water used
 - b. Compile a list of best water-use practices
2. Students track their water usage for one week
3. Record water use on a daily bar graph

Evaluation: Assess student abilities to calculate personal water usage at school and at home for one week

SOL

Science: 3.1 Plan and conduct investigations
3.9 Study the water cycle

Math: 3.14 Estimate and use actual measuring devices
3.21 Collect data and construct a bar graph
3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities
3.2 Present brief oral reports

Reading/Literature: 3.4 Use strategies to read a variety of printed materials
3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 5: Water Cycle

"Money Down the Drain" Project WET p. 328

Objective: Students will observe and calculate water waste from a dripping facet

Materials: Copy "Money Down the Drain" worksheet & answer sheet WET p.331

and 332, calculators, stopwatches with second hands, graduated cylinder, 3-gallon milk jugs filled with 3 different colors of water

Procedure:

1. Read *The Trip of a Drip*, Vicki Cobb
 - a. Discuss the journey water takes from its source to its final destination, your facet
 - b. Write a simple explanation of the trip water takes to your facet
2. Discuss how a facet that leak 160 drops per minute uses 6 g of water per day.
3. Assign two groups to each of three milk jugs
4. Record data on the worksheets
5. Compare results

Evaluation: Evaluate student abilities to accurately measure the amount of water collected from a leaky facet over a designated period of time

SOL

Science: 3.1 Plan and conduct investigations

3.9 Study the water cycle

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 6: Water Cycle

"The Incredible Journey" *Project WET* p.161

Objective: Students will simulate the movement of water within the water cycle

Materials: 9-large papers, 9 boxes (make story cubes), whistle

Procedure:

1. Read and perform *Experiments with Water*, Ray Broekel
 - a. Discuss the difference between fiction and nonfiction books read
 - b. Try and record results of at least one experiment
 - c. Share the results of experiments
2. Discuss how water moves in three forms (liquid, gas or vapor, solid)
3. Classify places water goes into 9 stations: clouds, plants, animals, rivers, oceans, lakes, ground water, soil, and glaciers on 9 pieces of paper around the room.
4. Start equal numbers of players at each station
5. Roll the die (cubes) to determine where players (water) move
6. Discuss the probability of going to different stations

Evaluation: Evaluate student abilities to predict the mathematical probability of going from one particular station to another particular station

SOL

Science: 3.1 Plan and conduct investigations

3.9 Study the water cycle

Math: 3.23 Investigate probability of a given situation

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.6 Read a variety of fiction and nonfiction selections

Writing: 3.8 Write across content areas

Lesson 7: Survival of the Species

"A-maze-ing Water" Project WET p. 219

Objective: Students will investigate and understand how humans affect water quality

Materials: Option 1: Copy *WET* p. 222, can labeled "chemicals" or "oil", Post-it notes

Procedures:

1. Read *The Wump World*, Bill Peet
 - a. Discuss what happened to the Wump world
 - b. Write an explanation of what pollution does to the world
2. Option 1
 - a. Draw a the maze (p. 222) with chalk on blacktop (gym tape on floor)
 - b. Position sources of pollution (students stick Post-it) on water (students) running through the maze
 - c. Trap water at treatment system (like London Bridge) and remove pollutants (Post-it notes) before exiting the maze.
3. Construct a graph of the number of students tagged with pollution in the water maze
4. Discuss the problems with run off (oil, chemicals, pesticides, fertilizers)
5. Research ways pollutants can be disposed of safely

Evaluation: Assess student abilities to graph the number of pollutants in the water maze

SOL

Science: 3.1 Plan and conduct investigations

3.10 Study the survival of the species

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lésson 8: Survival of the Species

"Pollution Search" PLT p. 114

Objective: Students will examine pollution, its definition, its source, and what people can do to reduce it

Materials: Copy p. 118, magazines, scissors, tape, poster board

Procedure:

2. Neighborhood Patrol:
 - a. Imagine life without clean air or water
 - b. Lists pollutants (i.e., anything not naturally in the air, on land, or in water)
 - c. Take students on outdoor walk; find evidence of pollution

- d. Draw pictures of pollution
3. Read aloud *The Cat in the Hat Comes Back*, Dr. Seuss (showing pictures):
 - a. Examine people's attitudes toward pollution in the story
 - b. Write your own pollution and clean-up story
4. Collect pollution around the school grounds
5. Weigh and sort the pollution into one of three categories: reuse, recycle, or reduce
6. Make a class graph with pollution collected and staple it on a bulletin board

Evaluation: Assess student abilities to accurately weigh, categorize, and graph playground pollution

SOL

Science: 3.1 Plan and conduct investigations

3.10 Study the survival of the species

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 9: Survival of the Species

"Deadly Waters" Project A/W p. 146

Objective: Students will investigate different kinds of pollution that can affect life--including aquatic plants and animals

Materials: 100 tokens (10 each) of different colors of 1/2" square construction paper pieces, graph paper, tape, pollution information sheet, 1/4 measure for paper tokens

Procedures:

1. Read *Wonders of Rivers*, Rae Bains
 - a. Discuss how friends of the rivers are protecting them from pollution
 - b. Compile a list of things people can do to keep our rivers clean
2. Activity:
 - a. List four major categories (chemical, thermal, organic, and ecological) of pollution in rivers
 - b. Write descriptions of pollutants from "Pollutant Information Sheet"
 - c. Group students in teams of three; each team sorts 1/4 teaspoon of tokens onto the graph
 - d. Tell students, more than two tokens of any pollutant is harmful to aquatic life
4. Share graph results and conclusions with the class

Evaluation: Evaluate student abilities to categorize four major groups of pollution in rivers

SOL

Science: 3.1 Plan and conduct investigations

3.10 Study the survival of the species

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 10: Sources of Energy

"Sunlight and Shades of Green" PLT p. 137

Objective: Students will investigate and understand green plants ability to use sunlight to make their own food (photosynthesis)

Materials: foil, paper clip, indoor broad-leaf plant (e.g., geranium)

Procedures:

1. Read *A Tree is Nice*, Janice May Udry
 - a. Write a descriptive paragraph telling why a tree is nice
 - b. Share your paragraph with the class
2. Cut patches of aluminum to cover tree leaf (outdoors) or plant leaf (indoors)
3. After four days, remove the patch and observe the leaf? (a light spot appears on the leaf because foil blocked the sunlight and the plant's ability to produce chlorophyll)
5. Record results and conclusions in a log
4. Read the imaginary field trip passage on *PLT* p. 138

Evaluation: Assess student abilities to transfer the photosynthesis experiment to a different green plant

SOL

Science: 3.1 Plan and conduct investigations

3.11 Study sources of energy

Math: 3.14 Estimate and use actual measuring devices

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Lesson 11: Life Cycle of a Tree

"Tree Life Cycle" PLT p.302

Objective: Student will investigate and understand the sequences and cycles of a tree

Materials: Art materials, copy of page 305, paper plate ("Tree Cookie p.291)

Procedures:

1. Read a variety of books such as *The Giving Tree*, Shel Silverstein, *How the Forest Grew*, William Jasperson, *Johnny Appleseed*, William Kellog (*PLT* p.385)
 - a. Compare fiction with nonfictional accounts of trees
 - b. Write a description of a tree's life cycle
2. Sketch student life cycles
3. Draw tree life cycles (*PLT* p.303)
 - a. Count the annual rings on the tree

- b. Describe events in the tree's life
4. Play "Plant Personification" (*PLT* p.303)
- Evaluation: Assess student abilities to transfer the life cycle of a tree to their life cycles

SOL

Science: 3.1 Plan and conduct investigations

3.8 Study sequences and cycles in nature

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 12: Survival of Species

"Playing Lightly on the Earth" *Project WILD* p. 292

Objective: Students will investigate and understand games that are harmful and safe for the environment

Materials: Access to outdoors

Procedures:

1. Read *Hop on Pop*, Dr. Seuss
 - a. Write a rhyming game book
 - b. Share your rhyming game book with the class
2. Distinguish between games that are damaging and not damaging to the environment
 - a. Look for evidence of games that damage the playground environment
 - b. Invent a game that does not harm the environment (15 minutes)
 - c. Share your environmental-safe game with the class

Evaluation: Assess student abilities to invent games that are environmentally safe

SOL

Science: 3.1 Plan and conduct investigations

3.10 Study survival of a species

Math: 3.15 Tell time using a analog or digital watch

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of materials

3.5 Demonstrate comprehension of materials

Writing: 3.7 Write descriptive paragraphs

Lesson 13: Survival of Species

"Tropical Treehouse" *PLT* p.160

Objective: Students will investigate and understand that survival of rain forest species depends on human actions

Materials: Copy "Cross-Section of a Rainforest" and "Rainforest Inhabitants" *PLT* p.165,166, bulletin-board paper for tree, paper, markers, pictures of rain forest animals

Procedures:

Writing: 3.7 Write descriptive paragraphs
Research: 3.10 Record information from resources

Lesson 15: Survival of Species

Objective: Students will investigate and understand the survival of the species of animals in other areas of the world

Materials: tagboard, die, markers, colored pencils, game markers, file cards

Procedures:

1. Read *Jumanji*, Chris Van Allsburg
2. Do activity "Jumanji" *UNITES V2 (3)* p. 14
3. Construct the game board "Jumanji"
 - a. Follow the directions
 - b. Write clues; draw the game board, and write directions to the game
4. Play the game until someone gets to the Golden City
5. Compare animals found in an African jungle with those found in an Asian jungle

Evaluation: Assess student abilities to simulate survival of the species in a game board format

SOL

Science: 3.1 Plan and conduct investigations

3.10 Study survival of a species

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 16: Plant and Animal Diversity

"Habitat Pen Pals" PLT p. 18

Objective: Students will learn about diversity of habitats and write letters from inhabitants perspective

Materials: paper, envelopes, wildlife magazines, tape

Procedures:

1. Read *Animals Animals*, Eric Carle
2. Suggest habitats (i.e., places where plant or animals live) such as park, pond, forest, river, meadow)
3. Gather habitats and animals from magazines such as *Ranger Rick*, *National Geographic*, *Big Backyard*
4. Tape animals under appropriate habitat (e.g., koala=Australian, penguin=Antarctic, polar bear=Arctic)
5. Assign each student an animal identity and a pen pal.
6. Research, and answer questions (*PLT* p. 19) about animal identities
7. Deliver letters to pen pal

Evaluation: Assess student abilities to correctly match animals with their habitats

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.14 Estimate and use actual measuring devices

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Research: 3.10 Record information from resources

Lesson 17: Plant and Animal Diversity

"Wildlife is Everywhere" Project WILD p. 20

Objective: Students will understand humans and wildlife share environments by investigating surroundings

Materials: String (optional)

Procedures:

1. Read *Chipmunk Song*, Joanne Ryder
 - a. Pretend that you are the chipmunk in the story
 - b. Compose your own version of "My Chipmunk Song"
2. Investigate the classroom for signs of life
3. Search out of doors for signs of wildlife
 - a. Graph results of search by section where animals were found
 - b. Interpret graph with students
4. Share experiences from these mini-field trips

Evaluation: Assess student abilities to interpret the results from the wildlife search

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Lesson 18: Plant and Animal Diversity

"Habittracks" Project WILD p. 36

Objectives: Students will identify basic components of a habitat (food, water, shelter and space in a suitable arrangement)

Materials: habitat maps, task cards, tape, scissors, pencils, small plastic bags, sponges, tempera paint, bulletin-board paper

Procedure:

1. Read *Animal Tracks*, Arthur Dorrus
 - a. Make animal tracks (sponge prints) using animal tracks from the book
 - b. Write a story about your animal tracks
2. Before activity:
 - a. Choose different animals from the book (*Animal Tracks*) to draw "tracks"
 - b. Place the animal tracks on a map of the school grounds, one animal per map

- c. Make colored task cards with symbol needs (food, water, shelter, space) for each animal (e.g., bear=brown food, water, shelter, space task cards)
- d. Hide cards outdoors
- 3. During activity:
 - a. Teams of three try to track the assigned animal from the scattered task cards
 - b. In ten minutes, record where teams found the task cards for their animal

Evaluation: Assess student abilities to match the animal with its tracks

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Lesson 19: Animal Diversity

"How Many Bears Can Live in This Forest" *Project WILD* p. 134

Objective: Students will investigate and understand the major component of habitat and identify a limiting factor

Materials: Five colors of construction paper, felt pen, envelope, blindfold

Procedures:

1. Read *The Biggest Bear*, Robert McCloskey
 - a. Make a semantic map of all the places the boy brought the bear
 - b. Retell the story by writing it in your own words
2. Compare the plight of *The Biggest Bear* with bears in the wild.
3. Use the chart (*Project WILD* p. 135) to make up 2"x 2" index cards
4. Scatter the colored cards
5. Assign students to be crippled, blinded, and mother bear with 2 cubs
6. Students (bears) begin gathering food
7. Each bear must gather 80% of its food to survive
8. Graph a chart of bears surviving after the activity

Evaluation: Assess student abilities to accurately count and graph surviving bears

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study animal diversity

Math: 3.21 Collect data and construct a bar graph

3.22 Read and interpret data represented in graphs

English: Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of a variety materials

Writing: 3.7 Write descriptive paragraphs

Lesson 20: Plant and Animal Diversity

Objective: Students will investigate the plant and animal diversity on a fictional island

Materials: Copy Wild Island (*UNITES V2 (3)* p. 10), 1"block grid paper, modeling

clay, Easter grass, markers, popsicle sticks

Procedures:

1. Read *My Father's Dragon*, Gannet
2. Design Wild Island from "My Father's Dragon" *UNITES V2 (3)* p. 8
 - a. Draw a compass rose, key, and scale on Wild Island map
 - b. Build Wild Island to a larger scale (1" squared-grid paper)
3. Share island communities with others
4. Research island communities
5. Write reports on island communities
6. Present reports to the class

Evaluation: Assess student abilities to transfer map skills to other situations

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Interpret data represented picture graphs

English/Oral Language: 3.1 Use communication skills in group activities

3.2 Present brief oral reports

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 21: Plant and Animal Diversity

Objective: Students will investigate and understand the requirements an animal needs in captivity

Materials: 1" block grid paper, Styrofoam blocks for ice shelters, modeling clay, markers

Procedures:

1. Read aloud *Mr. Popper's Penguins*, Atwater
2. Research animal requirements in zoo enclosures
3. Design a habitat for penguins from "Mr. Popper's Penguins" *UNITES V2 (3)* p. 20
 - a. Design and build a suitable habitat for penguins in your home.
 - b. Provide for food, water, shelter, and space needs for the penguins
 - c. Construct a model habitat on 1"-square block paper

Evaluation: Assess student's ability to transfer habitat needs to another animal such as "Polar Bears in Phoenix?" *Project WILD* p.120

SOL:

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Interpret data represented picture graphs

English/Oral Language: 3.1 Use communication skills in group activities

3.2 Present brief oral reports

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 22: Plant and Animal Diversity

"People, Places, and Things" PLT p. 280

Objectives: Students will investigate and understand plant and animal diversity in human communities

Materials: Tagboard, markers, shoe boxes, community map, rulers, tape, cm paper

Procedures:

1. Read *Roxaboxen*, McLerran
2. Research buildings (e.g., library, police station, fire station, businesses) and the services it provides to your community
3. Design Our Town USA using "Roxaboxen" activity *UNITES V2 (3)* p.24
4. Discuss communities as places where people work, play, provide goods and services
5. Share your building and its services with the class

Evaluation: Assess student abilities to research, build, and share community places

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study plant and animal diversity

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a bar graph

3.22 Interpret data represented picture graphs

English/Oral Language: 3.1 Use communication skills in group activities

3.2 Present brief oral reports

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Research: 3.10 Record information from resources

Lesson 23: Study food chains

"The Fallen Log" PLT p. 72

Objective: Students will understand how decomposition works within a food chain

Materials: log in produce box lined with white-shelf paper, magnifying glasses, student logs

Procedures:

1. Read *The Grampa Tree*, Mike Donahue
 - a. Explain how trees are essential to a food chain
 - b. Make a written description of a food chain using grampa tree

2. Bring in fallen log from playground or park
3. Examine the log (bark, insects under the bark, age of tree)
4. Record information in student logs

Evaluation: Assess student abilities to examine and record information in their logs

SOL

- Science: 3.1 Plan and conduct investigations
 3.5 Study food chains
 Math: 3.14 Estimate and use actual measuring devices
 English/Oral Language: 3.1 Use communication skills in group activities
 3.2 Present brief oral reports
 Reading/Literature: 3.4 Use strategies to read a variety of printed materials
 3.5 Demonstrate comprehension of materials
 3.6 Read a variety of fiction and nonfiction selections
 Writing: 3.7 Write descriptive paragraphs
 3.8 Write across content areas

Lesson 24: Food Chains

"Nature's Recyclers" PLT p. 75

Objective: Students will understand how decomposition works in the food chain

Materials: Sow bugs, food (wood, vegetable scraps, leaves, weeds), baby food jars

1. Read *Miss Rumphius*, Barbara Cooney
2. Collect sow bugs from under rocks, logs, leaf litter, and other debris
3. Experiment with sow bugs food preferences:
 - a. Each team tries a different food (wood, vegetable scraps, leaves, weeds)
 - b. Record results of sow bug diets on picture graphs
 - c. Make conclusions about what sow bugs eat in the wild

Evaluation: Assess students abilities to accurately record information from sow bug experiments

SOL

- Science: 3.1 Plan and conduct investigations
 3.5 Study food chains
 Math: 3.14 Estimate and use actual measuring devices
 3.21 Collect data and construct a picture graph
 3.22 Interpret data represented picture graphs
 English/Oral Language: 3.1 Use communication skills in group activities
 3.2 Present brief oral reports
 Reading/Literature: 3.4 Use strategies to read a variety of printed materials
 3.5 Demonstrate comprehension of materials
 3.6 Read a variety of fiction and nonfiction selections
 Writing: 3.7 Write descriptive paragraphs
 3.8 Write across content areas
 Research: 3.10 Record information from resources

Lesson 25: Animal Adaptations

"Surprise Terrarium" Project WILD p. 118

Objective: Students will observe an animal that uses camouflage as an adaptation

Materials: Terrarium with live animal (e.g., praying mantis, leaf hopper, tree frog, lizard), photos of animals using camouflage

1. Read *The Snail's Spell*, Joanne Ryder
 - a. Illustrate the adaptation used by a snail
 - b. Describe adaptations of other animals (e.g., skunk=smell, giraffe=neck, shark=teeth)
2. Observe the terrarium with the camouflaged animal
3. Record observations
4. Discuss camouflage (an adaptation that helps animals survive in the wild)
5. Draw an animal using camouflage

SOL

Science: 3.1 Plan and conduct investigations

3.4 Study animal adaptations

Math: 3.14 Estimate and use actual measuring devices

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Lesson 26: Animal Adaptations

"Birds and Worms" PLT p. 77

Objective: Students will use a survival relay uses protective coloration to help animals respond to life needs

Materials: 60 chips (20 each of 3 colors, 15 each of 4 colors, 12 each of 5 colors) to represent worms or bugs, clay, cloth pieces

Procedures:

1. Read *Animals Should Definitely Not Wear Clothing*, Judi and Ron Barrett
 - a. Make clothing for clay animals
 - b. Describe in writing how clothing protects your animal
2. Play two-team relay by trying to get each bird (student) fed
 - a. Each bird (student) flies over area and picks up one worm or bug (chip)
 - b. When every bird is fed, that team wins
3. Record data on bar graphs

Evaluation: Assess student abilities to record relay data on bar graphs

SOL

Science: 3.1 Plan and conduct investigations

3.4 Study animal adaptations

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a picture graph

3.22 Interpret data represented picture graphs

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Lesson 27: Animal Adaptations

"Thicket Game" Project WILD p. 112

Objective: Students will investigate and understand how animals are adapted to their environment in order to survive

Materials: blindfolds

Procedures:

1. Read *Just So Stories*, Rudyard Kipling to students (e.g. "How the Leopard Got Its Spots") and do activities from *UNITES V2 (3)* p.16
 - a. Write your own "Just So Story"
2. Students become "predator" and "prey" in this version of "hide and seek"
 - a. One blind-folded predator (student) counts aloud to 20
 - b. Other prey (students) hide in thicket until predator calls them by name
 - c. Each round of play caught prey become predators until all students are captured
3. Compare how animal adaptation (camouflage) helped or hindered survival

Evaluation: Assess student abilities to transfer *Just So Stories* to a survival activity

SOL

Science: 3.1 Plan and conduct investigations

3.4 Study animal adaptations

Math: 3.14 Estimate and use actual measuring devices

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Lesson 28: Animal Behavioral and Physical Adaptations

"Ants on a Twig" Project WILD p. 10

Objective: Students will investigate and understand basic needs of ants and humans

Materials: chalk, sidewalk

Procedures:

1. Read *Two Bad Ants*, Chris Van Allsburg
 - a. Compare the basic needs of ants to other insects
 - b. Write a story about two other insects (e.g. "Two Bad Bees")
2. Compare the survival needs of the two bad ants to the survival needs of humans
3. Observe ants outdoors for 20 minutes
 - a. Draw a picture graph of the ants
 - b. Interpret data from the picture graphs
4. Report findings of ant behavior
5. Demonstrate ant behavior:
 - a. Draw a chalk line on the sidewalk
 - b. Two lines of ants (students) must pass each other without falling off the chalk line

6. Describe similarities and differences between ants and human basic needs

Evaluation: Evaluate student abilities to draw and interpret picture graphs of ant behavior

SOL:

Science: 3.1 Plan and conduct investigations

3.4 Study animal behavioral and physical adaptations

Math: 3.14 Estimate and use actual measuring devices

3.21 Collect data and construct a picture graph

3.22 Interpret data represented picture graphs

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Lesson 29: Animal Behavioral and Physical Adaptations

"Seeing is Believing or the Eyes Have It!" *Project WILD* p. 116

Objective: Students will identify different kinds of vision as an example of adaptation in animals

Materials: kaleidoscope, binoculars or telescope, fish-eye mirror, tagboard, colored cellophane

Procedures:

1. Read *Glasses Who Needs Them*, Lane Smith

2. Set up three learning stations within the classroom:

a. One with kaleidoscopes (insects have compound eyes), one with binoculars or telescopes, (predatory birds such as eagles, hawks, owls have telescopic vision), fish-eye mirror (fish have wide-angle vision)

b. Visit each station

c. Try to guess what kinds of animals have each type of vision

3. Write a paragraph titled, "I'd like to see like a _____."

4. Make tagboard eyeglasses

Evaluation: Assess student abilities to simulate different visual adaptations of animals

SOL

Science: 3.1 Plan and conduct investigations

3.4 Study animal behavioral and physical adaptations

Math: 3.14 Estimate and use actual measuring devices

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas

Lesson 30: Diversity of Plants and Animals

"Capture, Store and Release" Project WET p.133

Objective: Students will describe how wetlands support a diversity of plants and animals

Materials: Wetland pictures, aluminum trays, colored water, large-light colored sponge, measuring cups, trowel, cardboard strips

Procedures:

1. Read *Swamp Angel*, Annie Isaacs
 - a. Discuss why she was called "swamp angel"
 - b. Describe how you would protect wetlands if you were a "swamp angel"
2. Demonstrate how ground stores water
 - a. Pour shallow amount of water in an aluminum tray
 - b. Place a sponge in the water (e.g. like soil)
 - c. Make a depression in the sponge (e.g. collects water from stored water)
3. Simulate surface water helps form wetlands
 - a. Dampen and distribute sponges
 - b. Explain cutaway portion represents the stream
 - c. Place two pencils or ruler across tray, elevate one end of the tray, and pour colored water into it (banks absorb water and it seeps into surrounding land)
4. Compare watersheds that do and do not have wetlands
 - a. Poke hole in one end of an aluminum tray and prop up other end
 - b. Pour two cups of water on top of tray
 - c. How would the watershed be affected if the wetlands (sponges) were removed?

Evaluation: Evaluate student abilities to accurately simulate a wetland environment

SOL

Science: 3.1 Plan and conduct investigations

3.6 Study diversity of plants and animals

Math: 3.14 Estimate and use actual measuring devices

English/Oral Language: 3.1 Use communication skills in group activities

Reading/Literature: 3.4 Use strategies to read a variety of printed materials

3.5 Demonstrate comprehension of materials

3.6 Read a variety of fiction and nonfiction selections

Writing: 3.7 Write descriptive paragraphs

3.8 Write across content areas